

black full-crested pileum, the lower parts, sides of head (below eyes), nuchal collar, lores, and frontlet white.

XENOPSARIS ALBINUCHA. (Plate VII.)

Pachyrhamphus albinucha, Burn. P. Z. S. 1868, p. 635; ScI. et Huds. Arg. Orn. ii. p. 222.

Xenopsaris albinucha, Ridgw. Bull. U. S. N. Mus. xiv. p. 479 (Oct. 22, 1891).

Prosopietus albinuchus, Cab. Bericht orn. Gesellsch. Berlin, Bericht ix. p. 4 (Nov. 30, 1891); id. J. f. O. 1892, p. 126.

Entire pileum (except narrow frontal band) down to the middle of the eyes glossy black, with a slight bluish lustre; narrow frontal band (including nasal tufts), lores, suborbital region, ear-coverts, and entire under portion of head, neck, and body, white; a rather narrow greyish-white nuchal collar (immediately below the black pileum); hind neck and back uniform ash-grey; the secondaries and rump similar, but browner; wings, tail, and upper tail-coverts greyish brown, the wing-coverts narrowly and indistinctly margined with whitish, the tertials distinctly edged with white; tail darker than wings, especially towards the end, the shafts pale brown basally; outer tail-feather broadly edged and margined round end with white. Upper mandible black, lower greyish; feet dusky in dried skin.

Whole length 5.0 inches, wing 2.4, tail 2.3, tarsus 0.5.

Hab. Sedge-beds on the shores of the Rio de la Plata, near Buenos Ayres (*Burm.*).

February 14, 1893.

OSBERT SALVIN, Esq., F.R.S., Vice-President, in the Chair.

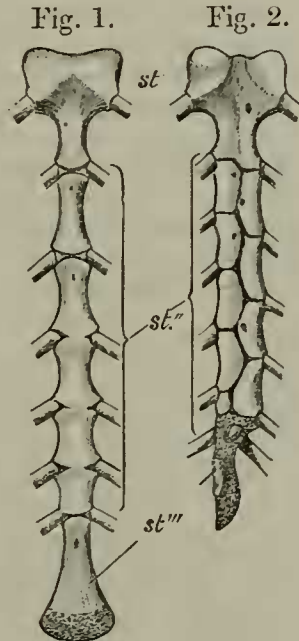
The Secretary read the following report on the additions to the Society's Menagerie during the month of January 1893:—

The total number of registered additions to the Society's Menagerie during the month of January was 104, of which 31 were by presentation, 3 by exchange, 62 by purchase, 3 by birth, and 5 on deposit. The total number of departures during the same period, by death and removals, was 122.

Prof. G. B. Howes, F.Z.S., exhibited an abnormal sternum of the Common Marmoset (*Hapale jacchus*), and made the following remarks thereon:—The specimen was obtained from one of six adult skeletons¹ recently macerated. The mesosternum consisted of five pairs of ossific elements, the anterior four of which were repetitively symmetrical, but disposed alternately, instead of side by side as is most generally the case with the Mammalia. The fifth pair were comparatively insignificant and altogether invisible

¹ All epiphyses united.

from the ventral aspect owing to the approximation in the ventral middle line of their parent (seventh pair of) ribs, in the manner customary for other Mammals. Variability in ossification of the fully formed mesosternal segments of Mammalia, such as may bring about irregularities of the sternebrae with a more or less alternate disposition of the lower ends of the opposite sternal ribs, is no uncommon phenomenon, especially among the Primates; but it rarely affects the presternum¹. In the case under consideration, the base of that segment was correspondingly asymmetrical, repeating, in relation to the first mesosternal segment,



Sternum of *Hapale jacchus*, viewed from the inner (dorsal) aspect. 1. Normal. 2. Abnormal. Adults, nat. size.

st'. Presternum. *st''*. Mesosternum. *st'''*. Post- or xiphisternum.

the relations of this to its fellow next in order of succession behind. The mesosternum, while retaining, in respect to the independence of its constituents, a persistently embryonic condition, had so far increased in width during growth that the transverse diameter of each succeeding sternebra exceeded, at its narrowest point, that of the expanded base of its normal counterpart. Comparison with the normal adult (fig. 1) showed that the sternum, as a whole, had undergone an increase in breadth proportionate to reduction in length, due allowance being made for the occasional presence of but four distinct mesosternal segments². When viewed from the inner aspect (fig. 2), the extreme regularity of

¹ See the skeletons of the Gibbon in the Museum of Natural History, and of the Orang in the Teaching Collection R. College of Science, South Kensington.

² Mivart, P. Z. S. 1865, p. 568.

recurrence of the parts gave the impression that the conditions met with might have been due to increased tension on the right side during growth. This was favoured by the fact that the right tibia and fibula, which were abnormal and angulated, bore traces of early fracture with subsequent synostosis, and by that of the non-distortion of the left anterior half of the presternum. It was, however, rendered the less likely by the fact that the xiphisternum, together with the posterior (fifth) mesosternal rudiment¹, was but feebly ossified; and by the fact that the former (fig. 1, *st'''*), instead of being posteriorly expanded as is most frequently the case with normal adults, was displaced to the left side, keeled along its left-hand border, and downwardly rotated. Although the departures from the normal met with in the sternum under consideration may conceivably have been due to purely mechanical causes, consequent upon the non-union of parts, they suggest the well-known characteristics² of that of the *Anthropomorpha*, among *Primates*; and, whatever their determining causes, the regularly recurring alternation of the mesosternal elements of opposite sides is especially interesting in this conjunction, as that has been independently recorded by Parker³ and Flower⁴ for the (apparently normal) developing sternum of the *Orang*.

Prof. T. Jeffery Parker, D.Sc., F.R.S., read a Memoir on the Cranial Osteology, Classification, and Phylogeny of the *Dinornithidae*, of which the following is an abstract:—

The author begins by giving a brief account of his material, amounting altogether to about 120 skulls, most of them in the Otago University Museum, Dunedin, Canterbury College, Christchurch, New Zealand, and the British Museum (Natural History). Two specimens, one of *Emeus*, sp. *a*, in the Dunedin Museum, and one of *Mesopteryx*, species *β*, in the Wellington Museum, are quite perfect.

Many of the skulls examined could not be assigned with certainty to any known species, having been found quite apart from the rest of the skeletons; they are distinguished in the paper by Greek letters in order to avoid confusion with certain species designated by English letters by Mr. Lydekker. Several species are known only by the crania, and in these cases the determination of the genus is to some extent conjectural, since the premaxilla and mandible afford the most striking and reliable generic characters.

A detailed description of the cranial osteology is given, the various genera and species being compared point by point. By the

¹ The investigations of Ruge and Burne forbid our regarding the reduction of this as necessarily indicative of a persistently embryonic state (*cf.* Burne, *P. Z. S.* 1891, p. 159).

² *Viz.*, increase in breadth, with diminution of length and reduction of the ensiform process.

³ *Ray Soc. Monograph on the Development of the Shoulder-girdle and Sternum*, pl. xxx. fig. 16.

⁴ *Osteology of the Mammalia*, ed. 3, p. 93, fig. 32.

examination of numerous immature specimens the ossification has been determined, and outline figures are given showing the boundaries of all the bones and their share in the various ridges, processes &c., the special characters of which are of classificatory importance.

Next follows a detailed comparison of the skulls of the Moas with those of the other Ratitæ, this section ending with a summary of cranial characters in the whole subclass.

A table of measurements is then given showing the chief dimensions, in millimetres, of the skull in the more important species of *Dinornithidæ* and in the other genera of Ratitæ. Care is taken to define as exactly as possible the precise way in which the measurements are made. A second table gives the leading measurements expressed as percentages of the length of the basis cranii, a series of indices being thus obtained which are frequently of use in the definition of genera and species.

The author next discusses the bearing of these facts upon the question of the division of the *Dinornithidæ* into genera. He finds that—judging from the skull alone and taking no cognizance of the rest of the skeleton—five genera can be distinguished, viz. *Dinornis*, *Pachyornis*, *Mesopteryx*, *Anomalopteryx*, and *Emeus*¹. Moreover, *Pachyornis*, *Mesopteryx*, and *Anomalopteryx* are found to present many points of resemblance with one another, of which the most obvious is the narrow, pointed beak. The two broad-beaked genera *Dinornis* and *Emeus*, on the other hand, differ strikingly both from one another and from the narrow-beaked forms. Relying on cranial characters only, the *Dinornithidæ* may therefore be divided into three subfamilies as follows:—

Subfamily *a.* DINORNITHINÆ.

Genus *Dinornis*.

Subfamily *b.* ANOMALOPTERYGINÆ.

Genera *Pachyornis*, *Mesopteryx*, and *Anomalopteryx*.

Subfamily *c.* EMEINÆ.

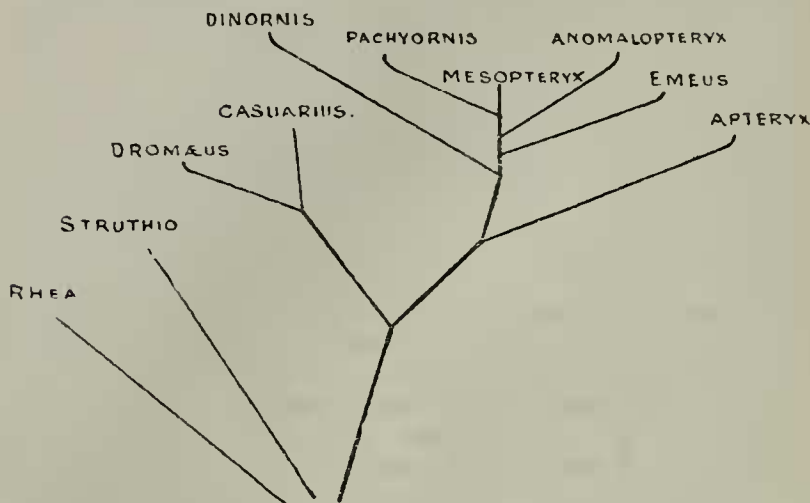
Genus *Emeus*.

This section of the paper ends with a summary of the cranial characters of the subfamilies and genera.

Lastly, the phylogeny of the group is discussed. *Mesopteryx* is considered to be the most generalized form, while *Dinornis* and *Emeus* are both highly specialized but in opposite directions. Of the other Ratitæ, *Apteryx* comes nearest to the Moas in the structure of its skull, and strong affinities are shown by both *Casuaris* and *Dromæus* to the New Zealand genera. *Struthio* and *Rhea*, on the other hand, show no special affinities, as far as the skull is concerned, either to the Australian forms or to one another.

¹ No account is taken of *Megalapteryx*, which is included by Lydekker among the *Dinornithidæ*, as nothing is at present known of its skull.

The author's views as to the phylogeny of the Ratitæ are shown in the following diagram :—



This Memoir will be published entire in the Society's 'Transactions.'

The following papers were read :—

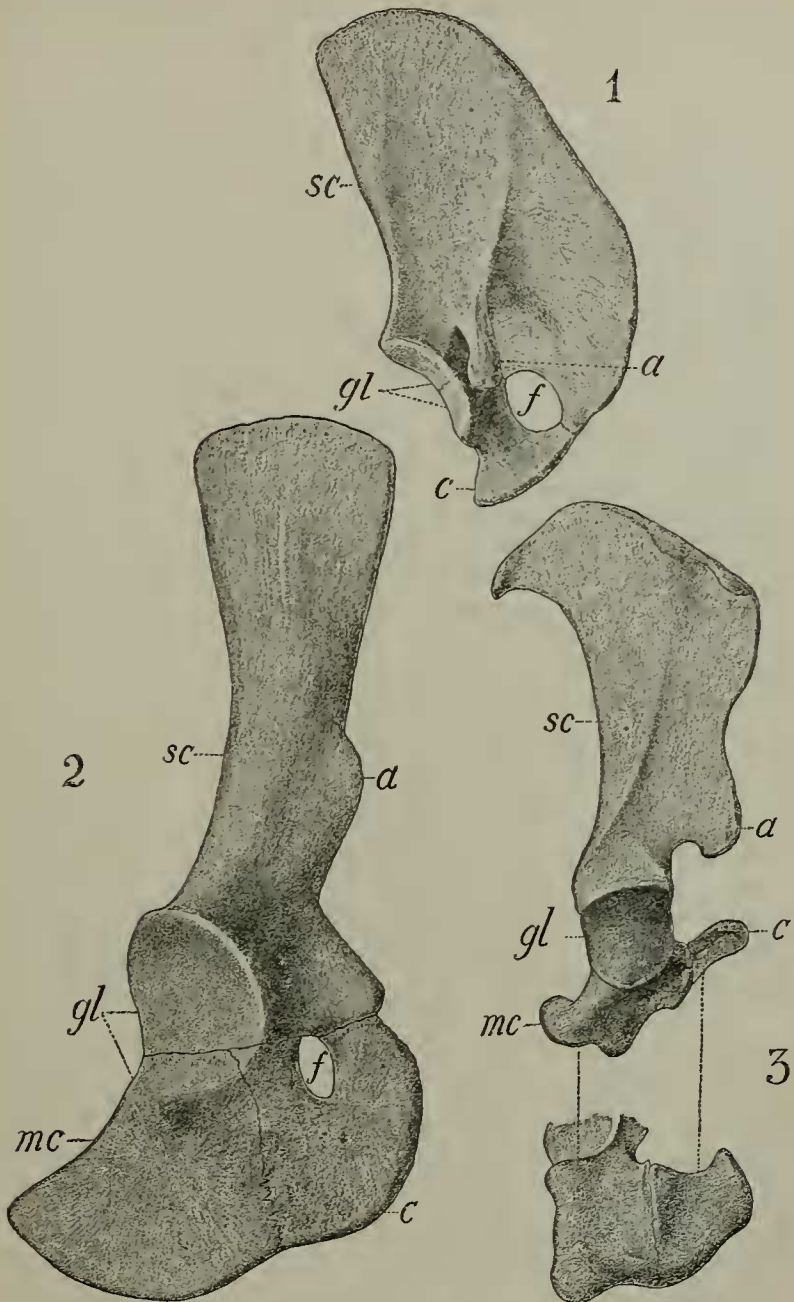
1. Note on the Coracoidal Element in Adult Sloths, with Remarks on its Homology. By R. LYDEKKER, B.A., F.Z.S.

[Received December 28, 1892.]

It has been ascertained by the late Professor Parker that the coracoidal element in the pectoral girdle of the Sloths ossifies independently from the scapula; but I have not seen it recorded that the division between the two elements can be observed in the adult condition. That such, however, is sometimes the case is proved by a mounted skeleton of *Bradypus* in the Natural History Museum, of which the right half of the pectoral girdle (exclusive of the clavicle) is represented in the drawing now exhibited (see woodcut, p. 173, fig. 1). The suture, although ankylosed, is distinctly visible, and shows that the coracoidal element forms a small moiety of the glenoid cavity; the suture passing from the latter to the upper border of the coraco-scapular foramen, and being continued from the lower edge of the latter to the free lower margin of the compound bone. I have also observed the coracoidal element perfectly distinct in the skeleton of an immature Sloth in the Museum.

The large size and the distinctness of the coracoidal element in the pectoral girdle of the Sloth appear to me to afford considerable support to the view that the Edentates form a group of equal value with the typical Eutheria.

The interest of the specimen does not, however, cease here. If the



The right side of the pectoral girdle of *Bradypus* (1), *Dicynodon* (2), and *Echidna* (3).

sc, scapula; a, acromion of do.; c, coracoid; mc, metacoracoid; f, coraco-scapular foramen; gl, glenoid cavity.

figure of the pectoral girdle of the Sloth be compared with that of the reptilian *Dicynodon* (fig. 2), it will be apparent that the elements

marked *c* in both are homologous; each articulating with the lower border of the front of the scapula, from which they are partially separated by a foramen (*f*), and each entering into the formation of the glenoid cavity. Now in the *Dicynodont* the bone marked *c* has usually been identified with the precoracoid. According, however, to Professor Howes¹ the latter term should be restricted to a portion of the clavicular arch, and the name epicoracoid applied to the element under consideration. This emendation, if properly authenticated, I should of course have been willing to accept, had it not been for another consideration. Apart from that consideration, we must call the coracoidal element in the shoulder-girdle of the Sloth the epicoracoid. This is in harmony with the conclusion of Professor Howes, who in the paper cited (p. 404) observes that "the coracoid process of the *Marsupialia* and *Placentalia* is the homologue of the *Monotreme's* epicoracoid." When, however, he proceeds to add that the exclusion of this epicoracoid from the glenoid cavity is one of its most characteristic features, I must take leave to differ from him. It is true that in the *Monotremes* (as shown in fig. 3 of the drawing) the so-called epicoracoid (*c*)—which all are agreed as representing the epicoracoid of the *Dicynodont*—is excluded from the glenoid cavity; but this appears to me to be due to its having been pushed forwards and bent downwards into the ventral plane of the body. Both the *Dicynodont* (in spite of what is urged by Professor Howes) and the *Bradypodine* so-called epicoracoid enter to a small extent into the formation of the glenoid cavity².

We have it, then, that the human coracoid process is homologous with the so-called epicoracoid of *Bradypus*, *Dicynodon*, and *Echidna*; while the element termed coracoid in the two latter, as articulating with the sternum, represents the element so named in the *Sauropsida*. Here, however, as has been pointed out to me by my friend Mr. Thomas, a new difficulty arises. The coracoid element was first named from the coracoid process of man, and therefore, undoubtedly, the bone which we have called epicoracoid is the true coracoid; while the element to which the latter term is applied in the *Monotremes* and *Sauropsida* is properly a metacoracoid. In spite of the difficulty which will probably arise in obtaining the adoption of the latter term for the posterior ventral moiety of the *Sauropsidan* pectoral girdle, I therefore suggest that we must for the future term that element the metacoracoid, and restrict the term coracoid to the coracoid process of the higher *Mammals* and the bone which has been termed epicoracoid in *Monotremes* and *Dicynodonts*³.

¹ Journ. Anat. Phys. vol. xxvi. p. 403 (1893).

² I may mention that I am indebted to Professor Howes for pointing out that I have incorrectly identified the acromion in the scapula of *Dicynodon*, the true acromion being the one lettered *a* in the accompanying figure.

³ Professor Howes has been good enough to point out to me that Sabatier has identified a rudiment of the metacoracoid in the human scapula (see Howes, *op. cit.* vol. xxi. p. 190).

2. On the present Range of the European Bison in the
Caucasus. By Dr. G. RADDE, C.M.Z.S.

[Received January 2, 1893.]

I have just received correct information as to the range of the European Bison (*Bos bonasus*) in the Caucasus. This animal is at present confined to the district around the sources of the Laba and Bjellaja on the north side of the Caucasus, and extends eastwards from the former locality to the springs of the Selentschük. The Bison is scarce everywhere, and generally seen in twos and threes; only once have the tracks of seven together been noticed, though occasionally as many as five have been observed. Evidently the Bison has discontinued its settled habits, and has taken to wandering about in this, its last refuge. Through the ever increasing encroachments of the settlers, and the consequent dispersal of the wild animals, and also, in many places, owing to the new supervision of the forests, the Bison is driven more and more towards the higher ridges of the mountains, and wanders about in the thick forests which border the lower portion of the alpine pasturages.

These forests in the lower lying districts are chiefly composed of *Carpinus betulus* and *Fagus*, above which stand lofty *Abies nordmanniana* and *A. orientalis*; the pine is less plentiful.

The most likely places to find this animal are at present near the sources of the Little Laba, and especially on its western confluent, the Uruschtem. This river is joined by a small stream, the Alaus, in the valley of which the Bison is often met with. It is found from 7000 to 8000 feet above the sea-level. Formerly, 30 or 40 years ago, it was met with much lower down, about 5000 feet, and it was also more common. That the Bison has now passed over the mountain-range and is wandering southwards is pretty certain. There was an instance of this in 1874: in that year an example was killed not far from Romanowskoje, about a day's journey from Sotschi (on the coast); the skin of this animal was sold in Kutais.

Just as the Bison is preserved in the forests of the Government of Grodno¹, so it is under Imperial protection in the Caucasus: the Grand-Duke Michael Nikolajawitsch gave the necessary orders in 1860. Nevertheless it is very difficult to keep guard over these last remaining animals satisfactorily. The whole district in which this animal occurs, and where, in the high mountains, the Chamois and *Capra caucasica* abound, has been for several years rented by the young Grand-Dukes George and Sergius Michaelowitsch: it comprises an area of 477,300 desjatines². In the Staniza of Psebai lives Herr Noska, who performs the functions of Head-keeper. But the task of watching for

¹ See P. Z. S. 1848, p. 16.

² A desjatine (Russian measure) =

	acres.	rds.	poles.
=	2	2	32

poachers is a very difficult one for him and his mounted under-keepers, and one which has not been attended with much success : one is always hearing the news that individuals of the few remaining herds of the Bison have been killed.

As the extirpation of the Bison here in its last retreat in the Caucasus will undoubtedly soon take place, I had already, nearly 10 years ago, drawn out a plan, which would not only enable me to shoot one or two specimens (♂, ♀), but also to thoroughly describe the animal both externally and internally, and to record everything of anatomical importance by illustration and description. I should also like to add to this an account of its habits, the places it frequents, discuss the hunting of it, and give all available information on the Caucasian Bison. It would likewise be necessary to compare it with a specimen from Grodno. The skeletons and skins should be preserved and mounted. Such a monograph as this would be of great value to the next generation, when the Bison will be numbered with the extinct animals.

To accomplish this thoroughly an anatomist, with a knowledge of the construction of the animal, must come and stay on the spot, as well as a photographer and an artist.

The carrying out of this good idea has unfortunately been put off from year to year ; however, it is probable that in 1893 it will be accomplished. It is necessary to be on the spot by the end of August, for in September the animal ascends the mountains to from 7000 to 8000 feet high, and it being very cold then, there would be no fear of the flesh decomposing quickly. The anatomist should remain on the spot until the animal is dissected, and everything measured, noted, figured, and observed. The smaller soft parts could be put in spirit or preserved with salt. When the work has been so far advanced, it would be advisable to make a stay in Psebai with the materials. The rough skeleton and skin could be prepared here and packed ready for transport.

Such an affair as this to be properly managed could *not* be undertaken in Tiflis, but only at St. Petersburg. Here, as in many other things, we are deficient in literature as well as in material for comparison.

All that is known of the Caucasian Bison previous to 1867 will be found recorded in a small work of my late father-in-law, Dr. J. F. Brandt : it was published in Band ii. (Ser. 2) of the 'Verhandlungen der russisch-kaiserlichen mineralogischen Gesellschaft zu St. Petersburg.' pp. 101-152, under the heading of "Dombe-Adombe." There is also another article by the same author in the 'Bulletin de la Soc. Imp. d. Nat. de Moscou,' 1866, No. 1, in which he compares, as far as possible, the Caucasian Bison with that of Grodno.

The example of the Bison which is mounted in our Museum was presented in 1868 by Count Sumarakow Elston, at that time Governor of the district of Kuban ; there was, however, a young specimen in the Museum in 1867, but this was very much damaged and was disposed of after the reception of the second example. The Tiflis specimen is an old bull ; it has a very poor mane and the

beard is short, but the hair on the head and between the horns is thick. There are in the Museum, besides the perfect animal, two imperfect skulls; in one of them the whole forehead and conspicuous frontal bones are missing, and in the other the lower jaw is absent. In the beginning of 1873 a Bison-calf was sent alive from the Caucasus to the Zoological Garden at Moscow, but it soon died. There are also reports of other cases of the capture of Bisons, upon which I can give you no certain particulars; but I have heard that the celebrated hunter Mr. St. George Littledale killed a Bison in 1887 whilst on a hunting expedition, in summer, in the above mentioned-district, in pursuit of *Cupra caucasica*¹.

February 28, 1893.

Sir WILLIAM H. FLOWER, K.C.B., LL.D., F.R.S., President, in the Chair.

Mr. A. D. Michael, F.Z.S., exhibited specimens of a Tick of the genus *Ixodes*, known locally as the "St. Kitt's" or "Gold Tick," received from Mr. C. A. Barber, of the Agricultural Department, Antigua. These Ticks had become a serious pest in the Leeward Islands, and there was a tradition there that they had been introduced about 30 years ago from St. Kitt's along with some Senegal Cattle. They were unknown in the Leeward Islands up to that date, and were now unknown in St. Kitt's. The specimens had been forwarded to Mr. Michael in order to ascertain whether the species could be identified, and, if so, whether there was any reason to suppose that it was of African origin. Mr. Michael observed that this species was a very well-marked and unmistakable one, described in 1844 by C. L. Koch, of Regensburg, from a male specimen received from Senegal. Koch had named it *Amblyomma venustum*, stating that it was one of the most beautiful of all the Ticks. According to modern classification it would be called *Hyalomma venustum*.

An adult female which Mr. Barber had kept in confinement had laid over 20,000 eggs, most of which were hatched; and Prof. Leidy, in America, had found that adult female Ticks sometimes weighed more than a hundred times as much when fully fed than when fasting.

The following extract from a letter from M. A. Milne-Edwards, F.M.Z.S., to Mr. Sclater, dated Museum d'Histoire Naturelle, Feb. 18, 1893, was read:—

"Vous avez décrit en 1880², sous le nom de *Lemur nijerrinus*,

¹ [Two fine specimens (♂ and ♀) of the Caucasian Bison, presented by Mr. Littledale, are to be seen mounted in the gallery of the British Museum.—ED.]

² [See P. Z. S. 1880, p. 451. The specimen in question, purchased Nov. 5, 1878, died June 18, 1882. A similar specimen, received Oct. 16, 1883, died April 4, 1885. Both specimens were sent to M. Milne-Edwards for examination.—ED.]